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Application Number : **GB0502514.3** Title : **Connector**

Applicant/Inventor : **Graham John Mcleish** Filing Date : **16 July 2003**

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10th August 2005

Response by Applicant to Examination Report of 22nd April 2005

on application No: GB0502514.3

Dear Sir

In response to the objections raised in the examination report of 22nd April, 2005 and in the endeavour to expedite matters I have amended the specification and claims, in particular Claim 1 and I trust that, as a result of the amended claim 1, it is now apparent, therefore, on further examination of each piece of prior art, that none of them actually anticipates applicant's now amended Claim 1. Since each of the amended Claims 2 to 37 is now appendant to amended Claim 1, it is believed that the Examining Authority, in the light of this submission, will feel able to acknowledge the novelty and inventiveness of each of Applicants' Claims as now presented and, as now made clear in the amended claims, this ability of the Applicant's connector to automatically seek and locate represents a real technical benefit conferring novelty and inventiveness.

I respectfully suggest that on a subsequent analysis of their respective technical contents, it can readily be seen that the Applicant's amended claims are clearly distinguished in a patentable manner from the disclosure of any of the prior documents. I also respectfully suggest, as explained in more detail below, that the aims and intentions behind these different disclosures as well as the solutions which were proposed by the respective inventors for the different perceived problems would clearly have dictated away from seeking to make any combination of the various disclosures; and there is no reason whatever to suppose that Applicant's elegant and simple solution to the problem which he saw in the specific field of the present application could readily have been foreseen from these documents without inventive step.

Let me take each objection and cited document in turn. In order to hopefully clarify things I have included the original objections in italics.

Novelty

1. *The invention as defined in claims 1-5, 7-13, 15, 24-26, 29-37, 40 and 41 is not new because it has already been disclosed in each of the following documents:*

The benefits achieved of using annular shaped magnets with open magnetic fields at the bottom of and inside a wall is new, inventive and non obvious. It also goes against general accepted views and practices in the art in that it does not use side pole pieces to focus and increase the contact connection force.

I do not believe my invention has been disclosed in any of the cited documents for the following reasons.

FR 2638907A *[DALMAU & TILHOS] particularly figures 5 to 17: cited against claims 1-5, 7-10, 13, 15, 24, 25, 29-35, 37 and 41*

In response to the objection to the original Claim 1, Claim 1 is now amended.
A valid objection to the original Claim 2 must apply to figures 14 to 17 only because figures 5 to 13 can easily connect offset. The amended Claim 1 should overcome this objection.

I do not agree with the objection to the original Claim 3 for the following reasons:

Generally, FR 2638907 A does not enjoy the benefits of Applicant's claims of open magnetic fields and therefore this does not disclose the arrangement of the present invention.

FR 2638907A has not sought to address the problem which is addressed by the present applicant, namely the automatic seeking, locating and connecting properties of the applicant's invention. The arrangement of pole pieces illustrated in Figs. 7 and 8 provides a magnetic connection in which the magnetic field is closed. The arrangement of the present application is clearly distinguished from the arrangement of the said French patent application by the features which are set out in the Applicant's claim.

FR 2638907A goes to some great length in describing the arrangement of the pole pieces around element 5 or 27 in order to close the magnetic field with element 6 in a magnetisable form. There is however no description whatsoever as to how element 6 if actually incorporating a magnet was constructed to ensure the necessary closing of the magnetic field when connected. There is more than reasonable doubt as to whether element 6 was ever a magnet.
The vagueness of the French document in this respect does not help matters with its 'catch all' phrases and no description to back them up. That something could in theory have been done but clearly was not is not enough to make that an obvious solution to a problem that was not stated as needing a solution. i.e. automatic seeking, location and connection in difficult and/or out of reach locations with no possibility of a misconnection in an offset position.

My following response however is to the theoretical existence of element 6 being a magnet which when connected with element 5 or 27 must still form a closed magnetic field to satisfy the statements in the abstract, description and claims of FR 2638907A.

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Specifically, **FR 2638907A** does not disclose my invention of automatic seeking, locating and connecting properties in a non offset position because in page 1 of the description lines 9-12 regarding the elements 5 and 6 or 27 and 6, it states the magnets or magnetisable elements are 'complementary' i.e. they 'complete' the magnetic circuit and the magnetic field is 'closed' when connected. This essential requirement of a closed magnetic field is clearly stated in the summarising of the distinctive technical features in the abstract, repeated on page 2 line 27 and is the actual subject of claim 5.

The description goes into some considerable depth detailing how this will be achieved with pole pieces around elements 5 or 27.

If element 6 is only a magnetisable material such as mild steel there would be no interacting magnetic fields creating the automatic seeking, locating and connecting benefits of my connector.

If element 6 is a magnet then, when connected, the two magnetic elements 5 or 27 and 6 must have pole pieces completely surrounding them so as to always 'close' the magnetic circuit. These pole pieces are 'optimally' designed to collect and absorb as much of the free space magnetism possible and to 'focus' it for a stronger 'connection'. Whichever magnet/s has/have the side pole pieces, most of the magnetism entering these side pole pieces will be focused into a small area and very little magnetic field will be emitted into free space.

Crucially: These pole pieces change the connecting face of a single faced magnet from a single pole, either N or S, to a face having both N and S on the same face.

This prevents any automatic seeking, locating and connecting properties and the ability to attract the parts together to form an electrical connection beyond the magnetic misconnection means.

Having a multipolar face on one magnetic element in conjunction with a magnetisable other element may be desirable in creating a stronger connected 'holding' power. However, when using two magnets having a multipolar face on one or both magnetic elements in a substantially non concentric position wishing to travel towards a concentric connection, they will inevitably at some point create a force of repulsion between those elements when a N pole faces a N pole and a S pole faces a S pole. In any travel towards a concentric position the elements would always encounter repulsion from like poles. Therefore the original claim 3 in GB0502514.3 is novel and valid because FR 2638907A having both N and S poles on the same face means that the dual pole magnetic field created would never extend 'beyond the magnetic connection means' in a way 'to attract the parts together to form an electrical connection.' In fact the opposite would occur in that as the two elements approach each other on a path to concentric connection and as there is always two poles on the same face of one or both elements they will always experience a repelling magnetic force at some point which will prevent further automatic travel to a concentric position. Applicant's connector benefits from each element having a single oppositely poled magnetic face which creates an attractive interaction between their open wide ranging magnetic fields.

FR 2638907A clearly cannot anticipate the amended Claim 1 of the present application because of its ability to always produce the entirely opposite effect. Using stronger magnets in FR 2638907A will not overcome this situation because the pole pieces must also increase proportionally in order to always be able to absorb the extra magnetism to 'close' the magnetic circuit. I trust that the

Examiner will readily see that the technical effects produced by the two different arrangements are quite different.

FR 2625847 A *[DALMAU] removably mounted magnets on bayonet connection coupled without rotation, e.g. 14,19 figure 2, and 30,31 figure 3: cited against claims 1-3, 5, 8, 9, 13, 15, 24-26, 29-32, 35 and 36*

I do not agree with the objection to the original Claim 1 as the male part does not have a 'first terminal having a circular cross section'. It doesn't have any terminals and always uses a separate light bulb to make the electrical connection.

I do not agree with the objection to the original Claim 2 as this connector does not have 'magnetic misconnection means' which prevents the male and female from connecting in a non-concentric position. This connector can easily connect offset.

I do not agree with the objection to the original Claim 3 as in the previous FR 2638907A case this connector is again surrounded by pole pieces which are designed to absorb and focus the magnet's free space magnetism. It also has both N and S poles on the connecting face and the magnets are also diametrically magnetised and not through depth.

FR 2808624 A *[HONORAT & MALLIARD] central and annular contacts, outer annular magnets (aimants): cited against claims 1, 8, 90, 10, 13, 24, 25, 29, 33-35, 37 and 41*

In response to the objection to the original Claim 1, Claim 1 is now amended.

I do not agree with the objection to the original Claim 2 as this connector does not have 'magnetic misconnection means' which prevents the male and female from connecting in a non-concentric position. This connector can easily connect offset.

US 5401175 *[GUIMOND] e.g. column 3 lines 1-9: cited against claims 1, 7-10, 12, 24,25, 35, 36, 37 and 41*

In response to the objection to the original Claim 1, Claim 1 is now amended.

This connector is for a completely different field of application as a microwave coaxial connector for high frequency radio aerial type connections and similar.

In its field the use of its outer metal body as a conductor for the microwave signals is quite acceptable but its use as a lighting or power connector at mains voltages would be lethal.

These would be major reasons, amongst others, that no-one would have used it as a starting point to get to the Applicant's invention.

Inventive step

2. *The invention as defined in claims 8, 10-23, 34-37, 40 and 41 is obvious in view of what has already been disclosed in the following documents:*

Given that the amended Claim 1 now possesses both novelty and inventiveness having regard to any one piece of cited art, and no proper motive for combining the pieces of prior art, it is clear that Applicant's amended Claim 1 is both novel and inventive. That being so, all the claims appendant to Applicant's amended Claim 1 should be similarly allowable over the cited art.

The above statement also applies to points 3 and 5 below.

US 5971810 *[TAYLOR] cited against claims 8, 10-21, 34, 36, 37, 40 and 41*

This connector is in a totally different field of application. i.e. electric kettles and the like.

This connector works perfectly by gravity alone and there is no reason to turn it upside down and to introduce magnets into it.

GB 2162701 A *[TYTAN] cited against claims 22 and 23* Original Claims 22 and 23 now deleted.
US 6283767 *[SORNES] cited against claims 22 and 23* Original Claims 22 and 23 now deleted.

3. ***US 5971810*** *does not disclose magnets, but discloses features of the connectors which are not inventively associated with magnets in an expected context: in addition, the matter specified in claim 19 appears be mechanical equivalent to that in the citation, with the male and female couplings reversed without advantage.*

4. *The other two documents indicate that the materials of the magnets specified in claims 22 and 23 are expected in the context of connectors. In any case, the materials are commonly known in applications where a strong magnetic force is required.*

   Original claims 22 and 23 now cancelled.

5. *Claim 16 appears to specify features which are very common in connectors and cannot be regarded as inventive.*

Plurality

6. *Many of the dependant claims are dependant on claim 1. When amending claim 1 in the light of the disclosure in the cited documents, care should be taken not to specify more than one invention*

I believe this has been done.

Other matters

7. *The scope of claim 29 is indeterminate since it is defined in terms of a light bulb which does not form part of the connector to which the claim is directed. In the absence of the light bulb, it would not be possible to determine whether a given connector fell within the scope of the claim or not.*

Original Claim 29 has now been amended to 'for use with any type of electrical appliance'.

8. *Claims 30, 31 and 32 are not fully understood and appear to be of indeterminate scope. Magnetic attraction reduces to an amount inversely proportional to the square of the distance from the pole of a magnet, and does not cut off outside a given range of distance as defined in the claims and the corresponding description in page 17 lines 22-31 and in page 21 lines 6-9 and 19-21. Care should be taken not to add matter in response to this objection.*

The intention behind these claims was that these were guaranteed distances that the shown connector could be made to operate. Whilst it is clearly correct to point out that a magnetic field would still exist beyond these limits, and it is stated in the description on page 5 lines 2-4 and page 17 lines 29-30 that the connector might well operate beyond these limits, it could not be guaranteed to automatically seek and locate continually beyond these distances in the embodiments shown in the drawings.

9. *Notwithstanding the above, the ranges set out in the claims do not appear to be fully supported by the description of the embodiments of the invention.*

With regard to the intentions mentioned above, the description does specifically support the ranges on page 4, lines 25 -32 and page 5, lines 1-4 as well as mentioned above more generally on page 17, lines 22 – 31, and again on page 21, lines 6 – 9 and 19-21.

10.Any amendments made to the claims should be reflected in amendment to the corresponding description in pages 3-8.

I believe this has been done with the deletion of references to rare earth type of magnets.

11.The end of the range in page 17 line 26 is obscured by the words "up to".

These two words have now been deleted.

Conclusion

The Applicant believes the present invention represents a significant step forward in this art, solving the problem of automatic seeking, locating and connection in difficult and/or out of reach locations. That something so simple and operates so successfully has eluded the industry will often of itself be a pointer towards inventive merit. The Applicant believes his inventive step deserves the award of a patent.

We trust that on further review the Examining Division will agree with the applicant in relation to all the points raised in this response and that as a consequence, the next communication from the UK Patent Office will be favourable.

However, if there should be any remaining point the applicant differs from the Examiner substantially as to the technical facts, the Examiner is cordially invited to telephone the Applicant if for some reason, he still does not see matters in the way in which Applicant does, in the hope that a brief discussion may resolve matters.

Yours faithfully

Graham John Mcleish